

Replacement Listing of Claims

This listing of claims will replace all prior versions, and listings, of the claims in the application:

Claim 1 (currently amended): A molecular rotary motor comprising:

a first array of a first motor molecule wherein the first motor molecule is disposed upon a first surface; and

a second array of a second motor molecule~~[[,]]~~ wherein the second motor molecule is directionally aligned and disposed upon a second surface, the second surface being different from the first surface, and

wherein the first and second arrays are in sufficiently close contact to interact and rotate the second ~~array~~ surface relative to the first ~~array~~ surface.

Claim 2 (currently amended): The molecular motor of claim 1, further comprising a driven member ~~rotated~~ rotatable by the interaction between the first ~~array~~ surface and the second ~~array~~ surface.

Claim 3 (withdrawn – previously presented): The molecular motor of claim 1, wherein the first array and the second array comprise multiple nested arrays that interact with one another to rotate relative to one another.

Claim 4 (withdrawn – currently amended): The molecular motor of claim 1, wherein the first ~~array is disposed on~~ surface comprises a first curved surface and the second ~~array is disposed on~~ surface comprises a second curved surface.

Claim 5 (withdrawn – previously presented): The molecular motor of claim 4, wherein the first and second curved surfaces are continuous curved surfaces.

Claim 6 (withdrawn – previously presented): The molecular motor of claim 5, wherein the first and second curved surfaces are complementary shaped cylindrical or conical surfaces.

Claim 7 (withdrawn – previously presented): The molecular motor of claim 6, further comprising a first nested member and a second nested member, wherein the first and second curved surfaces are complementary curved surfaces of the first and second nested members.

Claim 8 (previously presented): The molecular motor of claim 1, wherein the first motor molecule is myosin and the second motor molecule is actin.

Claim 9 (original): The molecular motor of claim 1, further comprising a source of ATP.

Claim 10 (currently amended): The molecular motor of claim 1, wherein the ~~first array is disposed on a first surface, the second array is disposed on a second surface, and the~~ first and second surfaces comprise perforations to allow permeation of a liquid fuel source to the motor molecules.

Claim 11 (withdrawn): The molecular motor of claim 1, wherein the first array is coated on a first curved surface, and the second array is coated on a second curved surface.

Claim 12 (withdrawn – previously presented): The molecular motor of claim 1, wherein one of the arrays is coated on an outer surface of a cylinder, shaft or cone, and another of the arrays is coated on an inner surface of a surrounding structure having a complementary shape that substantially conforms to a shape of the outer surface of the cylinder, shaft or cone.

Claim 13 (currently amended): The molecular motor of claim 1, wherein the interaction between the first ~~array~~ surface and the second ~~array~~ surface rotates a driver.

Claim 14 (withdrawn): The molecular motor of claim 13, wherein the driver is an internal shaft or cylinder in the motor.

Claim 15 (withdrawn): The molecular motor of claim 13, wherein the driver is an outer curved surface of the motor.

Claim 16 (currently amended): A motor comprising:
a first array of a first motor molecule;
a second array of a second motor molecule that interacts with the first motor molecule to move directionally relative to the first array; and
a driven member moved by the directional movement of the second array,
wherein the first and second arrays of motor molecules are in sufficiently close contact to interact and move the second array relative to the first array, and
wherein the driven member is a rotating shaft, a propeller, a rotatable wheel, a lever-arm, a gear system, or a pulley system.

Claim 17 (previously presented): The molecular motor of claim 1, wherein predetermined dimensions of the first and second arrays determine a power output of the motor.

Claim 18 (previously presented): The molecular motor of claim 17, wherein the predetermined dimensions are lengths of the first and second arrays.

Claim 19 (withdrawn – previously presented): The molecular motor of claim 3, wherein a predetermined number of nested arrays are provided to select a speed of rotation of the motor.

Claims 20-39 (canceled)

Claim 40 (currently amended): The molecular motor of claim 1, further comprising a supply of a fuel source, wherein the supply of the fuel source is used to activate rotation of the second ~~array~~ surface relative to the first ~~array~~ surface.

Claim 41 (original): The molecular motor of claim 40, wherein the supply of the fuel source is a regulated supply of the fuel source.

Claim 42 (original): The molecular motor of claim 41, wherein the regulated supply of the fuel source is regulated by a switch or a valve.

Claim 43 (original): The molecular motor of claim 40, wherein the fuel source is ATP.

Claims 44-53 (cancelled)

Claim 54 (currently amended): A molecular motor comprising:
a first array of a first motor molecule disposed on a first surface;
a second array of a second motor molecule disposed on a second surface, wherein the second motor molecule interacts with the first motor molecule to move directionally relatively to the first motor molecule; and
at least one perforation in the first or second surface to allow permeation of a liquid fuel source through the surface to the motor molecules,
wherein the first and second arrays of motor molecules are in sufficiently close contact to interact and ~~move~~ rotate the second ~~array~~ surface relative to the first ~~array~~ surface.

Claim 55 (previously presented): The molecular motor of claim 54, wherein the first motor molecule is myosin and the second motor molecule is actin and the actin is applied directionally to the second surface.

Claims 56-58 (canceled)

Claim 59 (withdrawn): The molecular motor of claim 1, wherein the first array is coated on a planar surface of a first annular substrate and the second array is coated on a planar surface of a second annular substrate.

Claim 60 (withdrawn): The molecular motor of claim 59, wherein the coated planar surface of the first annular substrate is adjacent to the coated planar surface of the second annular substrate.

Claim 61 (withdrawn – currently amended): The molecular motor of claim 59, further comprising a driver coupled to the second annular substrate and wherein rotational movement of the second ~~array~~ surface rotates the driver.

Claim 62 (withdrawn-currently amended): The molecular motor of claim [[44]] 1, wherein ~~the~~ at least one of the first surface or the second surface comprises at least one planar surface of an annular substrate.

Claim 63 (withdrawn – previously presented): The molecular motor of claim 54, wherein the first or second surface comprises at least one planar surface of an annular substrate.

Claims 64-79 (cancelled)

Claim 80 (withdrawn): The molecular motor of claim 1, wherein at least one of the arrays is coated on a continuous loop of a flexible substrate.

Claim 81 (withdrawn – previously presented): The molecular motor of claim 80, wherein the continuous loop rotates along an elongated cylindrical, oblong, elliptical, or serpentine path.

Claim 82 (canceled)

Claim 83 (previously presented): A motor comprising:
a first array of a first motor molecule disposed on a surface of a cylinder, shaft or cone;
a second array of a second motor molecule disposed on a second surface,

wherein the first and second arrays are in sufficiently close contact to interact and move the second surface relative to the surface of the cylinder, shaft or cone, or to interact and move the curved surface of the cylinder, shaft or cone relative to the second surface.

Claim 84 (previously presented): The motor of claim 83, wherein the first array of the first motor molecule is disposed on the surface of a cylinder.

Claim 85 (previously presented): The motor of claim 84, wherein the second surface is a curved surface complementary to the surface of the cylinder.

Claim 86 (previously presented): The motor of claim 83, further comprising a driven member moved by the directional movement of the second surface or the surface of the cylinder, shaft or cone.

Claim 87 (previously presented): The motor of claim 83, wherein the first and second motor molecules are proteins.

Claim 88 (previously presented): The motor of claim 83, wherein the first motor molecule is myosin and the second motor molecule is actin.

Claim 89 (previously presented): The motor of claim 83, wherein the first motor molecule is kinesin and the second motor molecule is a microtubule.

Claim 90 (currently amended): The motor of claim 83, wherein the second surface is a curved surface complementary to the curved surface of the cylinder, shaft or cone.

Claim 91 (currently amended): The molecular motor of claim 1, wherein at least one of the first ~~array~~ surface or the second ~~array~~ surface is ~~disposed on~~ a surface of a cylinder, shaft or cone.

Claim 92 (cancelled)

Claim 93 (previously presented): The molecular motor of claim 1, wherein the second array is configured to rotate through at least one complete rotation relative to the first array.

Claim 94 (previously presented): The molecular motor of claim 1, wherein the first and second motor molecules are proteins.

Claim 95 (previously presented): The molecular motor of claim 1, wherein the first motor molecule is kinesin and the second motor molecule is a microtubule.

Claims 96-97 (cancelled)

Claim 98 (currently amended): The ~~molecular~~ motor of claim ~~[[44]]~~ 16, wherein the first motor molecule is kinesin and the second motor molecule is a microtubule ~~and the second motor molecule is applied directionally to the surface.~~

Claim 99 (previously presented): The molecular motor of claim 54, wherein at least one of the first surface or the second surface is a surface of a cylinder, cone or shaft.

Claim 100 (previously presented): The molecular motor of claim 54, wherein at least one of the first surface or the second surface is a surface of a cylinder.

Claim 101 (previously presented): The molecular motor of claim 54, wherein the first and second motor molecules are proteins.

Claim 102 (previously presented): The molecular motor of claim 54, wherein the first motor molecule is kinesin and the second motor molecule is a microtubule and the second motor molecule is applied directionally to the second surface.

Claim 103 (previously presented): The molecular motor of claim 54, wherein the second array and the second surface are configured to rotate relative to the first array and the first surface.

Claim 104 (new): The molecular motor of claim 1, wherein the second surface is rotatable relative to the first surface in a rotational direction that substantially parallels the directional alignment of the second motor molecule.

Claim 105 (new): The motor of claim 83, wherein the second surface is rotatable relative to the surface of the cylinder, shaft or cone.

Claim 106 (new): The motor of claim 83, wherein the surface of the cylinder, shaft or cone is rotatable relative to the second surface.

Claim 107 (new): The molecular motor of claim 2, wherein the driven member is rotatable in a rotational direction that substantially parallels the directional alignment of the second motor molecule.

Claim 108 (new): The molecular motor of claim 91, wherein the cylinder, shaft or cone has a longitudinal axis and the second motor molecule is directionally aligned substantially perpendicular to the longitudinal axis.

Claim 109 (new): The motor of claim 83, wherein the second surface is a surface of a second cylinder, second shaft or second cone.

Claim 110 (new): The motor of claim 109, wherein the second cylinder, second shaft or second cone has a longitudinal axis and the second motor molecule is directionally disposed on the second surface substantially perpendicular to the longitudinal axis.